

Science-Based Restoration Monitoring of Coastal Habitats

**Volume I: A Framework For Monitoring Plans Under the
Estuaries and Clean Water Act of 2000**

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Volume One:

- **A framework for creating a science-based monitoring plan**
- **Provides guidance in**
 - **Selection of habitats**
 - **Development of hypotheses**
 - **Selection of metrics**
 - **Structure of plans**

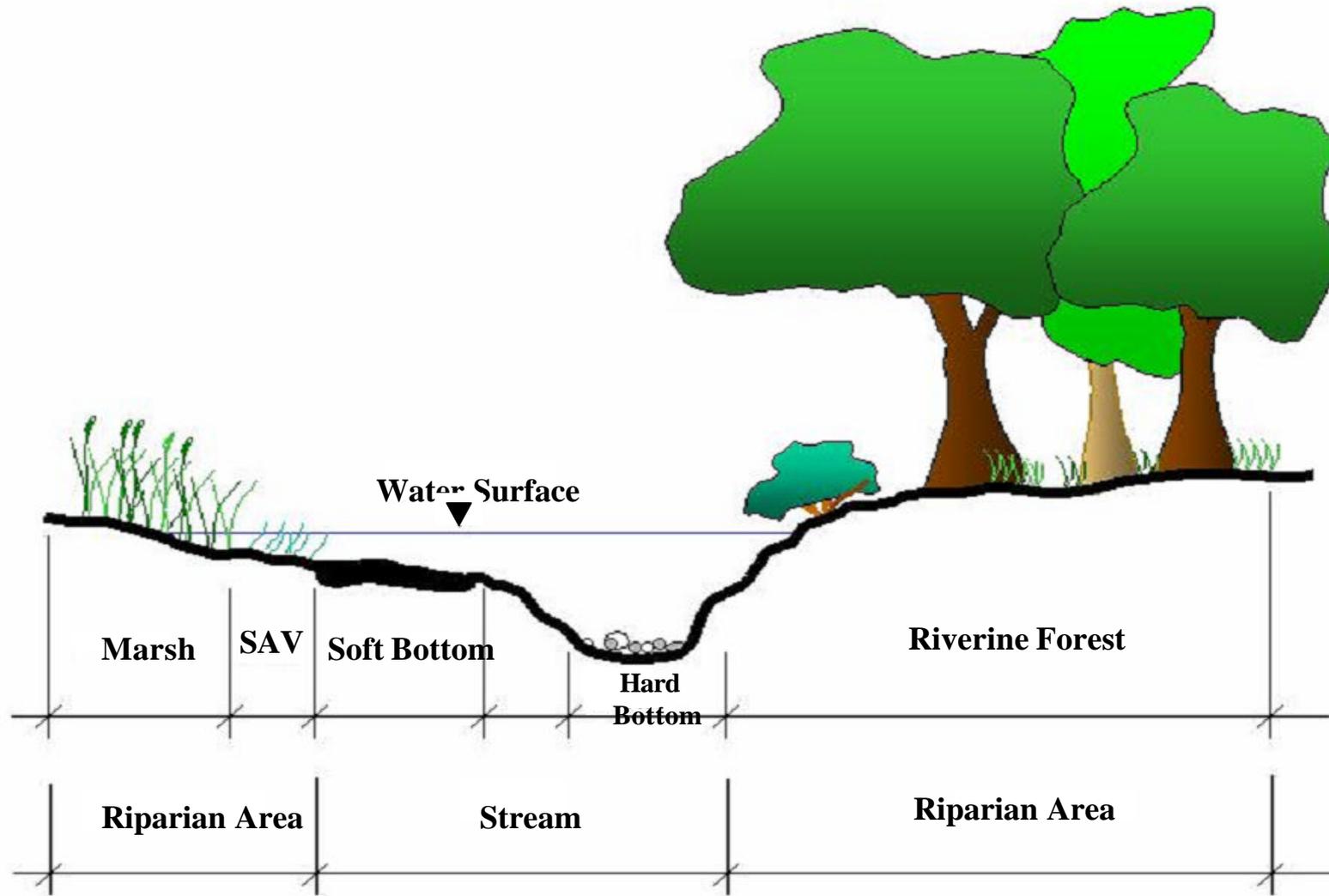
Volume I Contents:

- **Definition of estuary**
- **Habitat types**
 - **Habitat Decision Tree**
 - **Structural and Functional Characteristics**
 - **Habitat Specific Measures**
- **Monitoring plan development process**
- **Basic monitoring plan content**

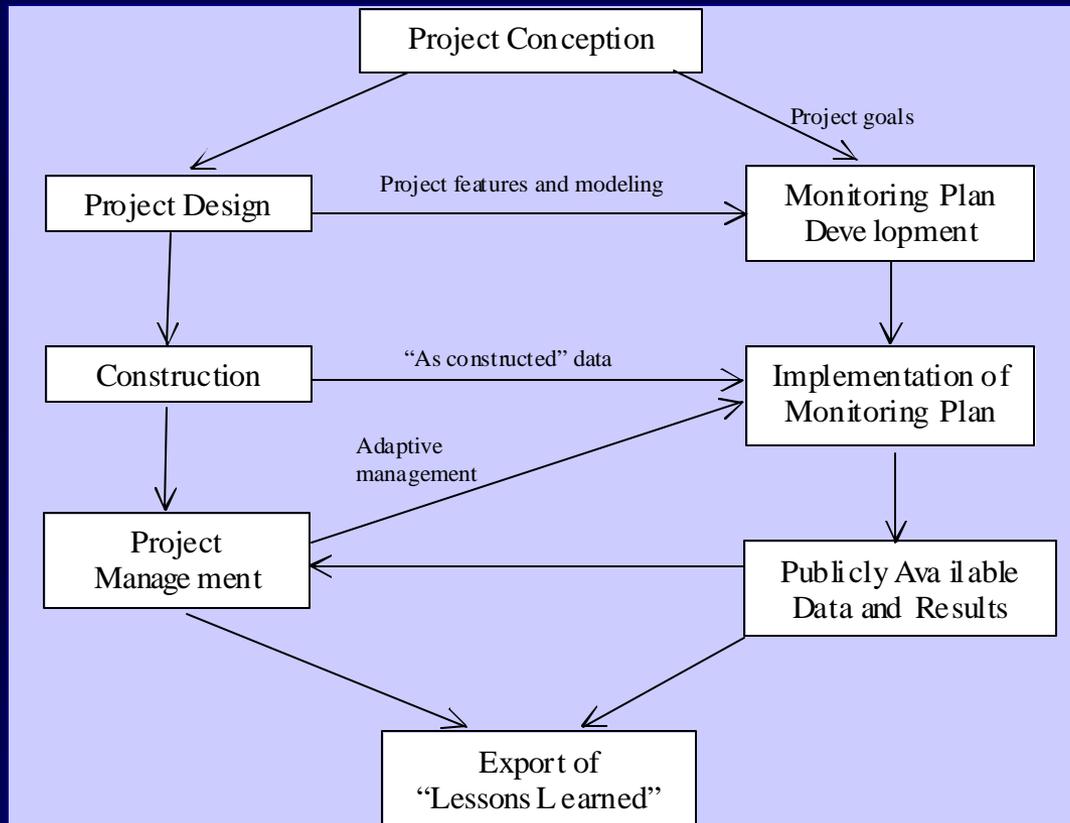
Habitats

- **Water column**
- **Hard bottom**
- **Coral reefs**
- **Oyster beds**
- **Soft bottom**
- **Kelp and other macroalgae**
- **Rocky shoreline**
- **Soft shoreline**
- **SAV (marine and freshwater)**
- **Marshes (marine and freshwater)**
- **Mangroves**
- **Deepwater swamps**
- **Riverine forests**

Habitats



Monitoring and the Restoration Process



Developing a Monitoring Plan

- **Goals of project and regional plan**
- **Testable hypotheses**
- **Input from experts**
- **Distribution of results and data**

Writing a Monitoring Plan

- **Clearly describes**
 - **Basic project details**
 - **Hypotheses to be tested**
 - **Sampling design and periodicity**
 - **Statistical analysis**

Volume One:

How to develop a monitoring plan

Volume Two:

Tools to support development

Presented in detail by David Merkey

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Volume II: Tools for Monitoring Coastal Habitats

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Provide support in the:

- Identification of variables
- Selection of techniques
- Coordination with other efforts
- Identification of experts
- Estimation of costs

Volume II Contents

1. Coastal Habitats
2. Restoration Monitoring Programs
3. Review of Federal Acts
4. Sample List of Costs
5. Socioeconomic Factors

Habitats

- Water column
- Hard bottom
- Coral reefs
- Oyster beds
- Soft bottom
- Kelp and other macroalgae
- Rocky shoreline
- Soft shoreline
- SAV (marine and freshwater)
- Marshes (marine and freshwater)
- Mangroves
- Deepwater swamps
- Riverine forests

Habitat specific guidance

- Structural and functional characteristics
- Recommended measurements
- QA/QC documents, manuals
- Case studies
- Annotated bibliography

Restoration Monitoring Programs

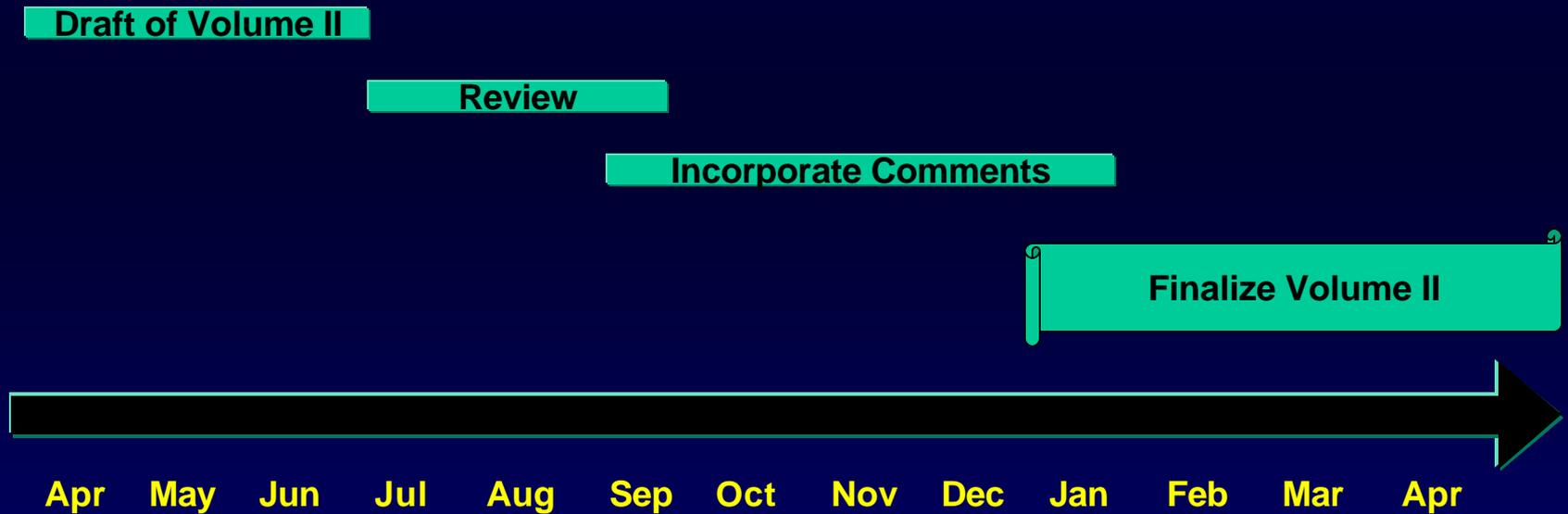
- Web-based
- Enables review of programs by
 - Region
 - Habitat type
 - Monitoring measurement
- Provides contacts, links

Federal Acts Relevant to Restoration Monitoring

Sample List of Costs Involved in Restoration Monitoring

- Scalable costs linked to 1995 dollars
- Sample costs include
 - Equipment
 - Personnel

Schedule



Current Status

1. Coastal Habitats – Drafts out for review
2. Restoration Monitoring Programs – Ongoing
3. Review of Federal Acts - Completed
4. Sample List of Costs– Completed
5. Socioeconomic Factors - Completed

Future Work



The Role Of Socioeconomic Monitoring In Coastal Restoration

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Monitoring



Socioeconomics Aspects of Restoration Planning

- **Socioeconomic Benefit Analysis**
- **Socioeconomic Monitoring**

Metrics and Processes for Socioeconomic Monitoring

- **Effective metrics:**
 - known baseline**
 - feasible and reliable data**
 - reflect stakeholder concerns**
- **Procedures for effective metrics:**
 - engage and structure stakeholders interests**
 - establish agreements for data collection**
 - practice adaptive management**

Metrics and Processes for Socioeconomic Monitoring

- **Data sources and analytical tools:**
 - surveys**
 - commercial fishing data**
 - regional economic data**
- **Linkages between metrics and habitat types**
- **Categories of effective metrics:**
 - recreation**
 - ocean or land-based commercial**
 - social and cultural**

Most restoration programs have no requirements for socioeconomic monitoring

Few restoration projects include socioeconomic monitoring

Barriers to Socioeconomic Monitoring

- **Public interest or support**
- **Analytical expertise**
- **Funding**

Future Work

- **Workshop**
- **Guidance document**